

Amendments to the Claims:

This following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the method comprising:

monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

determining when the operational status of any of the plurality of elements [[cards]] or the communications links between the plurality of elements [[cards]] indicates that the element [[card]] or the communications link between the plurality of elements [[cards]] is non-operational;

autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined;

determining when the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance; and

reporting that maintenance is required for the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] when it is determined that the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance.

Claim 2 (canceled)

Claim 3 (currently amended): The method of claim 1, further comprising preventing communications from being sent to the non-operational active element [[card]] or over the non-operational active communications link.

Claim 4 (currently amended): The method of claim 3, wherein an element [[a card]] is flagged with a non-operational status if the element [[card]] is receiving a software upgrade.

Claim 5 (currently amended): The method of claim 1, further comprising recording data related to each element [[card]] in a database; and updating the database to reflect changes to any of the elements [[cards]], wherein the changes include maintenance performed on, replacement of, or user configuration changes.

Claim 6 (currently amended): A method for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the method comprising:

monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

determining when the operational status of any of the plurality of elements [[cards]] or the communications links indicates that the element [[card]] or the communications link between the plurality of elements [[cards]] is non-operational;

autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the

plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined; and
detecting and reporting when any element [[card]] or communications link between the plurality of elements [[cards]] has a change in operational status.

Claim 7 (original): The method of claim 6, wherein said detecting and reporting includes:

tracking how long the change in operational status persists;
determining when the change in operational status has persisted for at least a predetermined amount of time; and
reporting the change in operational status when the predetermined amount of time is exceeded.

Claim 8 (original): The method of claim 7, wherein said detecting and reporting further includes discarding the change in operational status when the change in operational status does not persist for the predetermined amount of time.

Claim 9 (previously presented): The method of claim 1, wherein the flexible cross-connect system is a first node within a network, and further comprising maintaining a connection map for the network.

Claim 10 (currently amended): A computer program embodied on a computer readable medium for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the computer program comprising:

a code segment for monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

a code segment for determining when the operational status of any of the plurality of elements [[cards]] or the communications links between the plurality of elements [[cards]] indicates that the element [[card]] or the communications link between the plurality of elements [[cards]] is non-operational;

a code segment for autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined;

a code segment for determining when the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance; and

a code segment for reporting that maintenance is required for the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]].

Claim 11 (canceled)

Claim 12 (currently amended): The computer program of claim 10, further comprising a code segment for preventing communications from being sent to the non-operational active element [[card]] or over the non-operational active communications link.

Claim 13 (currently amended): The computer program of claim 12, wherein an element [[a card]] is flagged with a non-operational status if the element [[card]] is receiving a software upgrade.

Claim 14 (currently amended): The computer program of claim 10, further comprising a code segment for recording data related to each element [[card]] in a database; and

a code segment for updating the database to reflect changes to any of the elements [[cards]], wherein the changes include maintenance performed on, replacement of, or user configuration changes

Claim 15 (currently amended): A computer program embodied on a computer readable medium for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the computer program comprising:

a code segment for monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

a code segment for determining when the operational status of any of the plurality of elements [[cards]] or the communications links between the plurality of elements [[cards]] indicates that the element [[card]] or the communications link between the plurality of elements [[cards]] is non-operational;

a code segment for autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined; and

a code segment for detecting and reporting when any element [[card]] or communications link between the plurality of elements [[cards]] has a change in operational status.

Claim 16 (original): The computer program of claim 15, wherein said code segment for detecting and reporting includes:

a code segment for tracking how long the change in operational status persists;

a code segment for determining when the change in operational status has persisted for at least a predetermined amount of time; and

a code segment for reporting the change in operational status when the predetermined amount of time is exceeded

Claim 17 (original): The computer program of claim 16, wherein said code segment for detecting and reporting further includes a code segment for discarding the change in operational status when the change in operational status does not persist for the predetermined amount of time.

Claim 18 (previously presented): The computer program of claim 10, wherein the flexible cross-connect system is a first node within a network, and further comprising a code segment for maintaining a connection map for the network.

Claim 19 (currently amended): A method for controlling the operation of a flexible cross-connect system, the flexible cross-connect system having a plurality of elements including [[cards,]] an active control unit, a redundant control unit, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of cards, the plurality of elements further [[cards]] including a plurality of interface cards, the method comprising:

monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

determining when the operational status of any one of the plurality of elements [[cards]] or any one of the communications links between the plurality of elements [[cards]] indicates that the card is a non-operational element [[card]] or the communications link between the plurality of elements [[cards]] is a non-operational communications link;

autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the

plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined;

determining when the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance;

reporting that maintenance is required for the non-operational active element [[card]] or the non-operational active communications link when it is determined that the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance; and

maintaining a connection map associated with the flexible cross-connect system, the flexible cross-connect system being a node in a network, the connection map being arranged to indicate statuses of nodes with the network, wherein when it is determined that the operational status of any one of the plurality of elements [[cards]] or any one of the communications links between the plurality of cards indicates that the element [[card]] is non-operational or the communications link between the plurality of elements [[cards]] is non-operational, the connection map is updated to indicate a change in status of the flexible cross-connect system.

Claim 20 (currently amended): An apparatus suitable for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the apparatus comprising:

means for monitoring the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

means for determining when the operational status of any of the plurality of elements [[cards]] or the communications links between the plurality of elements [[cards]] indicates that the element [[card]] or the communications link between the plurality of elements [[cards]] is non-operational;

means for autonomously switching from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational

active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the plurality of elements [[cards]] when the operational status of the non-operational active communications link between the plurality of elements [[cards]] is determined;

means for determining when the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance; and

means for reporting that maintenance is required for the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] when it is determined that the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance.

Claim 21 (currently amended): An apparatus for controlling the operation of a flexible cross-connect system which has a plurality of elements [[cards]] including an active control unit, a redundant control unit, a plurality of interface cards, an active cross-connect unit, a redundant cross-connect unit, and a backplane forming a plurality of data buses, the data buses acting as communications links between the plurality of elements [[cards]], the apparatus comprising:

a monitor, the monitor being arranged to monitor the operational status for each one of the plurality of elements [[cards]] and each one of the communications links between the plurality of elements [[cards]] within the flexible cross-connect system;

a first determinator, the first determinator being arranged to determine when the operational status of any of the plurality of elements [[cards]] or the communications links between the plurality of elements [[cards]] indicates that the card or the communications link between the plurality of elements [[cards]] is non-operational;

a switch, the switch being arranged to autonomously switch from the non-operational active element [[card]] to an associated redundant element [[card]] when the operational status of the non-operational active element [[card]] is determined or from the non-operational active communications link between the plurality of elements [[cards]] to an associated redundant communications link between the plurality of elements [[cards]] when the operational status of

the non-operational active communications link between the plurality of elements [[cards]] is determined;

a second determinator, the second determinator being arranged to determine when the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance; and

a reporting arrangement, the reporting arrangement being arranged to report that maintenance is required for the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] when it is determined that the non-operational active element [[card]] or the non-operational active communications link between the plurality of elements [[cards]] requires maintenance.

Claim 22 (currently amended): The method of claim 1 wherein the communications links between the plurality of elements [[cards]] include at least a first communications link between the plurality of interface cards and at least a second communications link between at least one interface card of the plurality of interface cards and one at least one of the active cross-connect unit, the redundant cross-connect unit, the active control unit, or the redundant control unit.

Claim 23 (new): The method of claim 1 wherein autonomously switching from the non-operational active element to the associated redundant element includes switching from the active control unit to the redundant control unit.

Claim 24 (new): The method of claim 1 wherein autonomously switching from the non-operational active card to the associated redundant card includes switching from the active cross-connect unit to the redundant cross-connect unit.